# Report

06/09/05

1. **Deposition of corrosion products:** [Ref: Survey of corrosion product generation, transport and deposition in light water nuclear reactors, EPRI NP-522, March 1979]

   The rate at which corrosion products deposit on various components depend on several factors. For example,

   - Particle characteristics
   - Water temperature
   - Fluid Velocity
   - Radial flow

   Deposition rate increases with high fluid velocity and radial flow. This phenomenon confirms observations at APS. At APS deposition was observed at the high turbulence areas. The following figure depicts the above relation.

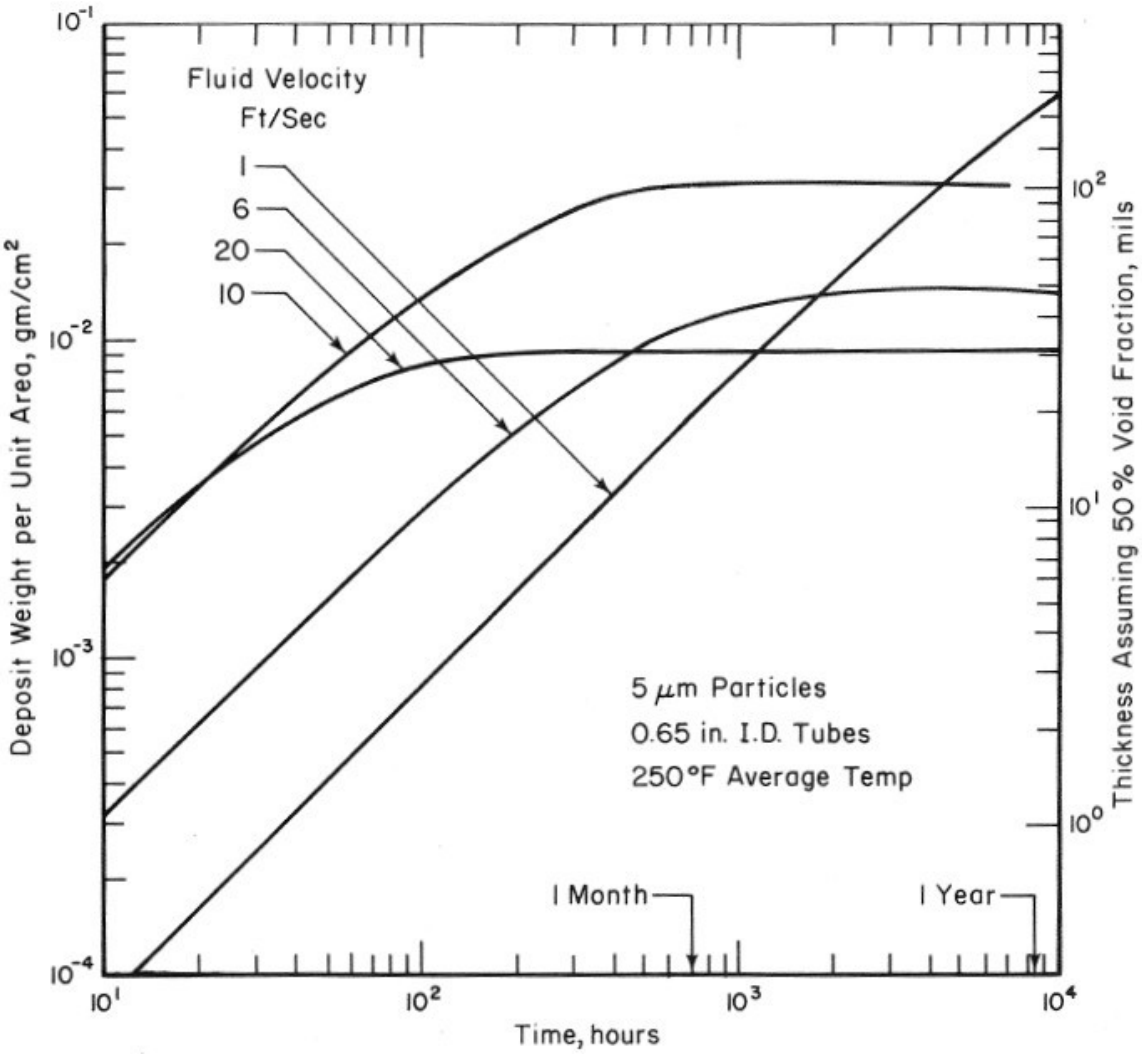

Figure 1: Behavior of deposit weight with time and fluid velocity

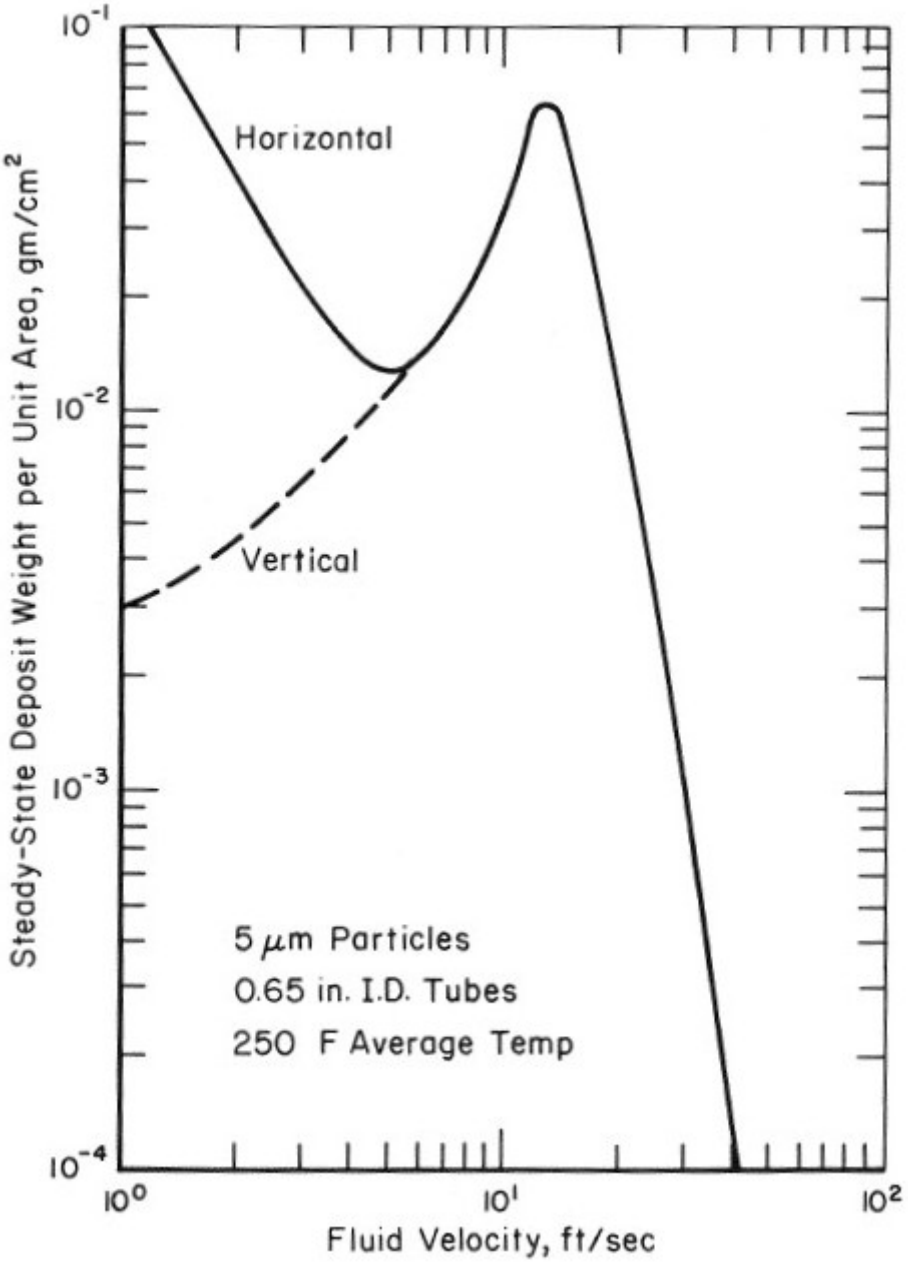


Figure 2: The influence of fluid velocity upon the steady- state deposit rate

Figure 2 shows the interaction of the various deposition processes on the amount of deposition as a function of velocity. The deposition rate is lower in vertically oriented tubes than the same in horizontally oriented tubes. Starting at the left, high deposits are due to the gravitational settling of bigger particles. As the velocity increases erosion of the deposition goes up. Hence, deposit weight decreases. At higher velocity deposition rate is faster than the erosion rate of the deposit and as a

result deposit weight increases. At very high velocity sticking probability decreases below unity and deposition weight continually declines.

There are several literatures which explain for above phenomenon. I have got the references and in the process of acquiring them.

2. **Experimental Setup:** Most of the pipes have been installed. Currently, technicians are working on the Electrical connections and PLC. We have added a bypass with a control valve for the venturi.

3. **Spectrophotometer:** Started reinstalling the machine at IIT. Since it was not used over a long period of time, several components need to be replaced. I have started preparing a list of components to be purchased; Thursday I will finalize the list.